

REMARKS

Favorable reconsideration and allowance of the present application are respectfully requested in view of the following remarks.

Claims 1, 2, 4, 5, 7, 9-23, and 25-30 are pending in this application, including independent claims 1 and 22. Independent claim 1, for instance, is directed to a method for reducing odor. The method comprises forming a coordination complex between a transition metal and a polydentate compound. The polydentate compound is a polyalkylimine. The method further comprises crosslinking the polydentate compound. The crosslinking renders the polydentate compound substantially water-insoluble. Lastly, the method comprises contacting the coordination complex with an odorous compound so that the one or more active sites of the transition metal capture the odorous compound.

In the Office Action, claims 1, 2, 4, 5, 7, 9-23, and 25-30 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Abstract of JP 04290547¹ (JP '547) in view of "Binding of Cupric Ion by Crosslinked Polyethylenimine", J. Polym. Sci. Polym. Chem. Ed. 1985, vol. 23, pg. 2875-2878 (Takagishi et al.), and with respect to claims 17-20 and 25, EP 1214878 (Stoddart et al.), and with respect to claims 9-12 U.S. Patent No. 4,275,054 (Sebag et al.), and with respect to claims 13-16 and 26-28, U.S. Patent No. 5,120,693 (Connolly).

JP '547 is directed to a deodorant that comprises a silicic acid gel structure containing a metal salt. JP '547 indicates that bentonite and a complex of isobutene-maleic anhydride copolymer and polyethyleneimine may be added to the gel. The

¹ Derwent-ACC-NO: 1992-393132

Office Action alleges that “it is the Examiner’s position that PEI will complex with the metal ions in the absence of evidence to the contrary.” Applicants respectfully disagree. First, JP ‘547 indicates that a **complex** of isobutene-maleic anhydride copolymer and polyethyleneimine may be added to the gel after formation. There is no indication in JP ‘547 that the polyethyleneimine in the complex would contain any available ligands in order to additionally complex with metal ions. Second, even if polyethyleneimine contained ligands available to complex with free metal ions, it can not be said that the “PEI will complex with the metal ions” as the isobutene-maleic anhydride/PEI complex is added to the gel after the formation of the silicic acid gels which “enclose” the metal salts. Applicants respectfully submit that “the examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a prima facie case of unpatentability.” MPEP 2107.02 (IV). Rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.

Furthermore, as correctly noted in the Office Action, JP ‘547 fails to teach crosslinking the polydentate compound rendering the compound substantially insoluble in water. Nevertheless, in an attempt to render independent claims 1 and 22 obvious, the Office Action cites Takagishi et al. as allegedly disclosing the motivation to crosslink the claimed polydentate compound. Applicants respectfully disagree. Takagishi et al. is directed to adsorbing metal ions in water utilizing PEI. As disclosed in Takagishi et al., the PEI is crosslinked to make the polymer insoluble in water. This allows the PEI to adsorb metal ions out of solution. In stark contrast, in the present application, the PEI is

complexed with the metal ions and crosslinked to, for instance, “enhance its adherence to the surface of a substrate when contacted with water.” pg. 11, lines 21-23.

Applicants respectfully submit that one of ordinary skill in the art would not look to the disclosure of Takagishi et al. that teaches adsorbing metal ions in aqueous solutions and combine with the isobutene-maleic anhydride/PEI complex of JP '547 in order to somehow crosslink the PEI section of the complex in an attempt to yield Applicants claimed invention. Applicants note that it is improper to simply pick and choose just those components needed from a prior art reference to combine in a Section 103 combination. Only with Applicants' specification could the structure of Applicants' claimed invention be attained, and any attempt to arrive at the structure of the claimed invention through study of the cited references is only reachable from improper hindsight analysis after viewing Applicants' own specification.

Additionally, regarding dependent claims 9-12, the Office Action cites Sebag et al. as disclosing the step of utilizing a crosslinking agent such as epichlorohydrin (claim 12) to facilitate the crosslinking of the polydentate compound. Applicants respectfully disagree. Sebag et al. is directed to a deodorant. The compounds disclosed in Sebag et al. are salts of polyanionic polyamides.

First, the Office Action points to Col. 2, lines 37-42² as disclosing Applicants' polyalkylimine required by both independent claims 1 and 22. Applicants respectfully disagree. As Sebag et al. notes:

The compounds of the invention **can easily be prepared** by a known type of condensation process, **by reacting an acid anhydride . . . with a cationic polymer** or oligomer . . . the cationic polymers or resins which can be used . . . (include) polyethyleneimines. Col. 2, lines 22-42

² The Office Action states Col. 4, lines 37-42, but Applicants believe the Examiner intends to point to Col. 2, lines 37-42.

(emphasis added).³

Thus, the cursory mention of a polyalkylimine is simply as an intermediate compound to a final product (polyanionic polyamide).

Second, even if Sebag et al. disclosed a product that included a polyalkylimine, as claimed by Applicants, Applicants respectfully submit that Sebag et al. does not disclose crosslinking the polyalkylimine as the Office Action alleges. The Office Action points to Col. 3, lines 25-30 as disclosing crosslinking a polyalkylimine. On the contrary, Sebag et al. discloses that "crosslinking of the **polyamino-polyamide** is effected with a crosslinking agent." Col. 3, lines 26-27 (emphasis added). Sebag et al. does not disclose crosslinking a polyalkylimine. Furthermore, "the polyamino-polyamide . . . is prepared by the polycondensation of an acidic compound on a polyamine." Col. 3, lines 7-9. Additionally, Col. 3, lines 9-25 denotes what group the acidic compound is selected from and what group the polyamine is selected from. Sebag et al. does not disclose a polyalkylimine as a part of either of these groups.

Additionally, regarding dependent claims 13-16 and 26-28, the Office Action cites Connolly as disclosing utilizing high surface area particles (such as those having a size less than about 100 nanometers and a surface area of from about 50 to about 1000 square meters per gram (claims 16 and 28)) as a carrier for the coordination complex. Connolly is directed to adsorbent agglomerates of zeoliteic molecular sieves bonded with silica particles.

First, Applicants respectfully submit that the silica particles of Connolly do not serve as a "carrier" as claimed by Applicants. The silica particles of Connolly are

³ The Office Action also points to Table I as disclosing a polyethyleneimine. See, also, Col. 8, lines 25-26 stating "Table I below indicates the **reactants** used in Examples 1 to 7." (emphasis added).

utilized as an adhesive, or bonding agent. As noted in Connolly,

preferably highly siliceous molecular sieve agglomerates, having nominal diameters within the range of about 40 to 800 micrometers, preferably from 100 to 600 micrometers, which are **bonded** with a **bonding agent** consisting essentially of amorphous silica particles having nominal silica particle diameters of from about 5 to 20 nanometers. Col. 2, lines 57-63 (emphasis added).

Thus, the silica particles of Connolly merely serve as a bonding agent to bond together the much larger molecular sieve agglomerate particles. In stark contrast, Applicants disclose and claim high surface area particles that act as a carrier for the complex. For instance, the complex may be present on the surface of the high surface area particles.

Second, as correctly noted in the Office Action, JP '547 "does not expressly teach a method for reducing odor further comprising combining high surface area particles have an average size of less than about 100 nm and a surface area of from about 50 to about 1000 square meters per gram and have a negative zeta." However, the Office Action goes on to allege, "it would have been obvious . . . to use the particles taught by Connelly et al. in the method of (JP '547).” Further, the Office Action states that one of ordinary skill in the art would be so motivated "because the (JP '547) provides the basic concept of using high surface area particles (silicates/bentonite) . . .” Applicants respectfully disagree. As correctly noted in the Office Action, JP '547 does not disclose high surface area particles. The mere disclosure of silicate and bentonite does not disclose or suggest "high surface area particles" as disclosed and claimed by Applicants. Indeed, there is no teaching in JP '547 that the silicates or bentonite disclosed may be "high surface area" or have a surface area of from about 50 to about 1000 square meters per gram (claims 15 and 28). As such, one of ordinary skill in the art would simply not look to the disclosure of Connolly and select the binder of Connolly

and somehow substitute this binder for the silicates or bentonite (which is not taught to be comprising "high surface area") of JP '547. Plainly, the only incentive or motivation for so modifying JP '547 using the teachings of Connolly in the manner suggested in the Office Action results from using Applicants' disclosure as a blueprint to reconstruct the claimed invention out of isolated teachings in the prior art, which is improper under 35 U.S.C. § 103. Accordingly, it is respectfully submitted that any such modification of the cited references relies on the impermissible use of hindsight, which cannot be successfully used to support a *prima facie* case of obviousness.

Thus, for at least the reasons set forth above, Applicants respectfully submit that the independent claims 1 and 22 patentably define over the references. Applicants also respectfully submit that, at least for the reasons indicated above, the dependent claims 2, 4, 5, 7, 9-21, 23, and 25-30 also patentably define over the reference(s) cited. The patentability of the dependent claims, however, certainly does not hinge on the patentability of the independent claims.

It is believed that the present application is in complete condition for allowance and favorable action, therefore, is respectfully requested. Examiner Arnold is invited and encouraged to telephone the undersigned, however, should any issues remain after consideration of this Response.

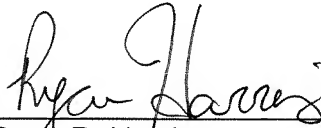
Please charge any additional fees required by this Response to Deposit Account No. 04-1403.

Respectfully submitted,

DORITY & MANNING, P.A.

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Date

A handwritten signature in black ink, appearing to read "Ryan P. Harris", is written over a horizontal line.

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